



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

Colleen Cripps, Ph.D., Administrator

FACT SHEET

(pursuant to NAC 445A.236)

Applicant: U.S. Department of Energy, National Nuclear Security Administration, Nevada Site Office (NNSA/NSO)
P.O. Box 98518
Las Vegas, NV 89193

Permit Number: UNEV2012203

Project Name: Nevada National Security Site

Facility Location: Nevada National Security Site / U-20az PS#1A
30 miles northeast of Beatty
Nye County, Nevada
NE ¼ of Section 20, T8S, R50E, MDB&M; Nye County.

Permitted Injection Wells (#): One (1)

Injection Well Location: Latitude: 37.233102° N
Longitude: 116.410269° W

General: NNSA/NSO has submitted a complete application to perform a site characterization study at the Nevada National Security Site. The project is located on public land administered by the U.S. Department of Energy. The objective of this proposed project is to determine whether trace quantities of noble gases from a nuclear test can be detected in soil gas along surface fractures during an onsite inspection for nuclear treaty verifications. This study will consist of injection of gases into well U-20az PS#1A, and collection of soil gas samples at the surface and up to 200 feet (ft) below ground surface (bgs).

The Barnwell underground nuclear test was conducted in 1989 at a depth of 1,971 ft bgs. The detonation cavity collapsed and as a result, a rubble chimney extends upward from the shot point to a depth of approximately 1,500 ft bgs within the vadose zone. After the Barnwell test, well U-20az PS#1A was drilled at a 20.5 degree angle from horizontal to intercept the chimney.

The Applicant proposes to perform two discrete injection activities of chemical and radionuclide compounds that are nearly inert in nature. The first injection activity will consist Freon 1202 mixed with air from an air compressor. After six months of soil gas

and surface monitoring, two radioactive tracers, Xenon-127 and Argon-37 will be mixed with air and co-injected with sulfur hexafluoride (SF₆) into the same formation. Soil gas and surface monitoring will again proceed for another six months. Monitoring will occur throughout a 1,640 ft radius of the injection point on all observable surface fracture zones. Funding is currently only available for the two aforementioned injections; if additional studies are needed, the Applicant shall receive written authorization from the Division prior to injection.

Injection Characteristics: The Applicant proposes to inject chemical and radioactive tracers into well U-20az PS#1A at the base of the packer (depth of 1,482 ft bgs). The first injection will consist of 706 cubic feet (ft³) of Freon 1202 mixed with 17,657,333 ft³ of air over a seven day period. Approximately six months later, depending on when the first tracer gas is observed, a second injection will occur. The second injection will consist of 706 ft³ of SF₆ mixed with 1,765,733 ft³ of air, co-injected with approximately 100 Curies (Ci) each of Xenon-127 and Argon-37, each diluted with 17,657,333 ft³ of air over a 24-hour period. Maximum injection pressure will be limited to 150 pounds per square inch.

Receiving Water Characteristics: The injection site is on Pahute Mesa. Potentiometric data indicates that groundwater flows to the southwest toward discharge areas in the Oasis Valley and ultimately Death Valley. The static water level at the injection site is estimated to be 2,100 ft bgs which is approximately 600 ft below the proposed injection depth. Due to the distance between the injection and groundwater depths, groundwater is not expected to be impacted by this test.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications that the Administrator may make in approving the schedule of compliance.

Rationale for Permit Requirements: The permit conditions will help to ensure that the injectate does not adversely affect the existing water quality or hydrologic regime.

Procedures for Public Comment: The Notice of the Division's intent to issue a permit authorizing the facility to inject into the groundwaters of the State of Nevada subject to the conditions contained within the permit is being sent to the **Las Vegas Review Journal** for publication. The notice is also being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **5:00 PM, July 5, 2012**.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator EPA Region IX or any interested agency, person or group of persons. The request must be

filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Proposed Determination: The Division has made the tentative determination to issue the proposed permit for a period of five (5) years.

Prepared by: Jason Ferrin, E.I.
Bureau of Water Pollution Control
May 2012